

Remarks

Claims 1-4 and 8-27 are pending in this application. Applicants note with appreciation the allowance of claims 1-3, 12-14, 17 and 18. Claims 4, 8-11, 15-16 and 19-27 have been rejected.

Claims 16 has been cancelled. Claims 4, 8, 9-10, 19 and 25 have been amended.

Rejections under 35 U.S.C. § 112, Second Paragraph

Claim 10 and 11 stand rejected under 35 U.S.C. §112, second paragraph. Applicants have amended claim 10 to overcome the rejections.

Rejections under 35 U.S.C. § 102

Claims 4, 9-11, 15, 16 and 19-27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Monson (U.S. Patent No. 4,863,477).

Independent Claim 4

Claim 4 has been amended to include the novel features of "prior to forming the concave, non cylindrical surfaces in the vertebral body endplates, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body; and affixing a bone surface milling mechanism to the at least one anchor."

Claim 12, which has already been allowed, also includes similar features. Therefore, claim 4 should be allowed.

Independent Claim 9

Claim 9 has been amended to include the novel features of "prior to forming the dome-shaped, concave surfaces in the adjacent spinal vertebral bodies, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body; and affixing a bone surface milling mechanism to the at least one anchor."

Claim 12, which has already been allowed, also includes similar features. Therefore, claim 9 should be allowed.

Independent Claim 19

Claim 19 has been amended to include the novel features of "(c) prior to forming the concave surfaces in the vertebral body endplates, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body, and (d) affixing a bone surface milling mechanism to the at least one anchor."

Claim 12, which has already been allowed, also includes similar features. Therefore, claim 19 should be allowed.

Independent Claim 25

Claim 25 has been amended to include the novel features of "prior to forming at least the portion of the hemispherical cavity in the endplate of one of the vertebral bodies, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body; and affixing a bone surface milling mechanism to the at least one anchor."

Claim 12, which has already been allowed, also includes similar features. Therefore, claim 25 should be allowed.

Dependent Claims

Claims 10-11, 15, 20-24 and 26-27 depend on and further limit independent claims 4, 9 and 25, and should also be allowed.

Rejections under 35 U.S.C. §103

Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Shepperd (U.S. Patent No. 4,863,476) in view of Michelson (U.S. Patent No. 5,015,247).

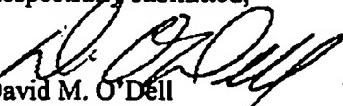
Claims 8 has been amended to include "implanting at least one anchor into one of the mounting holes; utilizing the at least one anchor to mount a bone mill on the patient's spine[.]"

Claim 12, which has already been allowed, also includes similar features. Accordingly, claim 8 should be allowed.

Conclusion

Applicants respectfully submit that all the claims in this application are in condition for allowance. The Examiner is invited to contact the undersigned at the numbers provided below if further consideration is required. Also, Deposit Account No. 08-1394 may be used for any over or under payments.

Respectfully submitted,


David M. O'Dell
Registration No. 42,044

Date: May 30, 2003
HAYNES AND BOONE, L.L.P.
901 Main Street, Suite 3100
Dallas, Texas 75202-3789
Telephone: 972/739-8635
Facsimile: 214/651-5940
File: 31132.59
R-48278_1.DOC

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on 6-2-03

B E Boyle

**Claim Amendments As Compared to
The Previously-Filed Amendment**

4. (Amended Four Times) A method of surgery comprising:
forming concave, non cylindrical surfaces in the endplates of confronting vertebral bodies[, and];
inserting between the formed concave surfaces an intervertebral disc endoprosthesis including:
confronting supports, each support having an exterior convex surface adapted to mate with one of the formed concave surfaces[.]; and
a resilient body interposed between the supports[.];
prior to forming the concave, non cylindrical surfaces in the vertebral body endplates,
implanting at least one anchor into a hole having a predetermined position in an anterior surface
of at least one adjacent vertebral body; and
affixing a bone surface milling mechanism to the at least one anchor.
8. (Amended Twice) A method of spinal surgery comprising:
forming mounting holes in one or more vertebral bodies of a patient's spine;
implanting at least one anchor into one of the mounting holes;
utilizing [said mounting holes] the at least one anchor to mount a bone mill on the patient's spine;
milling confronting bone surfaces on and in the patient's spine to a predetermined surface shape;
removing said mill; and
mounting an intervertebral disc endoprosthesis having a predetermined outer surface shape so that outer surfaces of the intervertebral disc endoprosthesis mate with the previously milled bone surfaces and are capable of motion relative to each other.

9. (Amended Four Times) A method of endoprosthetic discectomy surgery comprising:

receiving information about the size, shape, and nature of a patient's involved natural spinal vertebral bodies and natural spinal vertebral discs from imaging devices[,];

removing at least the involved, damaged natural spinal disc material from the patient's spine[,];

forming dome-shaped, concave surfaces in adjacent spinal vertebral bodies[, and];

implanting into the patient's spine, an intervertebral disc endoprosthesis comprising a resilient disc body and concaval-convex elements that at least partly surround and are capable of movement relative to the resilient disc body in the patient's spine[.];

prior to forming the dome-shaped, concave surfaces in the adjacent spinal vertebral bodies, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body, and

affixing a bone surface milling mechanism to the at least one anchor.

10. (Amended) The method of surgery accordingly to claim 4, further comprising affixing the [concaval-convex] supports to the adjacent bone of the vertebral body.

19. (Amended Twice) A method of surgery comprising:

(a) forming concave surfaces in the endplates of confronting vertebral bodies,[and]

(b) inserting between the formed concave surfaces an intervertebral disc endoprosthesis, comprising:

(1) confronting concaval-convex supports, each support having an exterior convex surface adapted to mate with one of the formed concave surfaces,

(2) a resilient body interposed between the concaval-convex supports, and comprising a gasket and nucleus[.].

(c) prior to forming the concave surfaces in the vertebral body endplates, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body, and

(d) affixing a bone surface milling mechanism to the at least one anchor.

25. (Amended) A method of inserting a prosthesis in a disc space between two adjacent vertebral bodies, comprising:

forming at least a portion of a hemispherical cavity in an endplate of one of the vertebral bodies, the endplate have a remaining surface surrounding the cavity[, and];

inserting an endoprosthesis into the disc space and the cavity, the endoprosthesis including at least one support having an exterior convex surface adapted to mate with the cavity, and a body interposed between the at least one support and the second vertebral body, where the at least one support is movable relative to the body[.];

prior to forming at least the portion of the hemispherical cavity in the endplate of one of the vertebral bodies, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one adjacent vertebral body; and

affixing a bone surface milling mechanism to the at least one anchor.